had inspired the author, we would feign hope that we have done justice to the excellence of those feelings, and to the personal worth which gave rise to them. And we have wholly failed in giving expression to our opinions, if we have not made it appear that his account of the fevers of this country is a work for which every American physician may well feel grateful to him.

We look for the appearance of the second volume with eagerness. The promised account of European fevers, if written with equal faithfulness and ability, will furnish us with a highly interesting and valuable piece of medical history. We are glad to learn that as soon as that volume is received, the whole work will be immediately issued from the press in this country.

E. H.

Art. XVI. *Nouveau Système de Chimie Organique, fondé sur des methodes nouvelles d'Observation*, par F. V. Raspail. Accompagné de douze planches gravées, dont six coloriées. Paris, 1833, pp. 576. 8vo.

THE close and intimate connexion existing between the sciences and their dependence on each other for an explanation of the phenomena peculiar to each, becomes more and more evident, as we advance in knowledge. Even chemistry, whose limits were formerly considered as perfectly defined, has within a few years assumed an entirely new aspect, and her votaries, instead of relying exclusively on crucibles and reägents as the only legitimate instruments of research, have called to their aid the apparatus and laws of other departments of learning, and have thus been enabled to extend the domain of their art in a wonderful and unexpected manner.

This union of means has been strikingly successful in our researches into the ultimate composition of bodies, and has afforded results whose truths can be verified by the strictest rules of mathematical calculation. By the theory of atoms and that of definite proportions, we are enabled to ascertain with certainty the primary constituents of inorganic substances, and the rules which govern and modify their combinations, so as to be able in a vast number of instances to imitate nature, by forming these combinations at will. But when we attempt to apply these rules to the explanation of the phenomena of organized beings, we find our resources fail, and are obliged to confess the futility of our means. For although animal and vegetable substances are composed of a very small number of simple bodies, these are combined in so great a variety of forms, and their union is regulated by a power or powers so widely different from those which act on inorganic matter, that the usual means of explanation totally fail. In inorganic substances, all the phenomena may be referred to action of external agents, the operation of purely physical forces, and the simple and well-ascertained laws of affinity. In organic substances, on the contrary, we are compelled to acknowledge the influence of something, which whilst it regulates and controuls all the processes and phenomena that occur, is at the same time only known to us by its results. It is not therefore surprising that our knowledge of the ultimate structure of organic substances should be so imperfect, and more especially, when the modes in which all investigations respecting them have been conducted, are so defective. These methods have universally consisted in subjecting the substances alluded to, to trials which destroyed their distinctive character, and reduced them to the rank of inert bodies, a plan of proceeding which has necessarily resulted in an infinity of errors and the creation of a multitude of artificial difficulties.

The author of the work now before us appears to have been fully impressed with the uselessness of attempting to investigate the mysterious operations of nature by following the beaten track of mere chemical analysis, and has taken a far wider field of observation, by invoking the assistance of all the demonstrative sciences. His plan is thus stated:—

> "Nature having deposited certain substances in certain organs, I shall demand of anatomy the means of recognising these organs, and as soon as I shall have learned to distinguish them in all their varieties of form, I shall call on chemistry to aid me with her processes and reägents. If these organs are too small to be properly studied with the naked eye, I shall invoke the assistance of the microscope. Optics will teach me to follow the course of luminous rays, and enable me to appreciate the effects of reflected or refracted light, and in fact I shall transport my chemical laboratory to the object-glass of my microscope."

This is in truth the only method from which we are to expect advantageous results, and although its full devélopment will demand the most assiduous attention and the lapse of many years, no step that is gained will have to be retraced, and the labours of each successive inquirer will not be spent in overturning those of his predecessors, as is too often the case under the present defective systems of observation, which however plausible they may appear, have the radical defect of leading only to the study of the isolated properties of a substance, and can never enable us to judge of them as they are combined and distributed by the hand of nature.

M. Raspail has been known to the scientific world for a few years only, as his first publication was in 1825; since which time, however, no writer has given evidence of greater zeal or more untiring industry in various departments of the natural sciences; for it is not as a chemist alone that M. Raspail is advantageously known—his botanical acquirements entitle him to a high rank, as is evinced in his essay on a general classification of the gramineæ in the *Annales des Sciences Naturelles*, (t. V.) and his numerous botanical observations in the *Bulletin des Sciences et de l'Industrie*. The present work is founded on the numerous memoirs he has already published, and may therefore rather be considered as a condensation and arrangement of former materials than as matter entirely new: we mention this, as in any questions of priority that may be discussed, we shall consider the date of the original memoir, in preference to that of the present work.

But whilst thus allowing the fullest credit to M. Raspail, and in appreciating his labours as of the greatest benefit to science, we cannot avoid protesting in the strongest terms against the angry spirit which pervades the present work, for however he may conceive himself neglected or oppressed, he should have recollected that personal abuse and political accusations against his competitors in the field of science are sadly out of place in a work like the present, and we are even tempted to believe from his own confessions, that he owes many of the evils of which he complains to the unsparing manner in which he has attacked others. This observation is not applicable to our author alone, and we are glad of an opportunity of making a few observations upon it. The squabbles and petty disputes of the learned have done more to degrade science in the eyes of the ignorant than any thing else, and from their frequency and acrimony of late years, many injurious consequences have arisen, which it will take years of concord to remedy. In the medical profession they are still more productive of evil, and if persisted in, must eventually destroy that respect for it so essential to its usefulness.

There is one other point to object to in the present publication, and unfortunately it holds good with almost all the other writings of our author that we have met with; this is his silence respecting the labours and discoveries of those engaged in the same pursuits; they are seldom or ever alluded to except in terms of reprehension, without any allowance being made for the possibility of error on the part of M. Raspail himself. In fact, a student who had not an opportunity of following the progress of chemistry and vegetable physiology, would be very apt, from a perusal of the present work, to imbibe the idea that the whole merit of the discovery of the facts detailed in it was attributable to the author alone, and that all others who have treated on similar subjects, have only involved them in error and obscurity.

M. Raspail commences with a long but important introduction, which requires a more extended notice than is generally awarded to such preliminary matter.

> "This new mode of observation," says he, "applied to the study of organized bodies, is based on a certain number of generalities, and requires for its exposition a certain number of operations, which I shall proceed to explain, and shall afterwards devote separate chapters to the method of operating on a small scale, and that of proving the truth of the results obtained by investigations on a more extended one, with the theory which appears to me most naturally to arise from the alliance of these two modes; and finally I will give the classification adopted."

Our limits will, however, prevent our entering on his account of the apparatus made use of, and we must refer such of our readers as wish to pursue similar researches to the work itself, which gives some admirable rules for the use of the microscope, and describes a very simple but effective mode of carrying on chemical operations within the sphere of action of that instrument. M. Raspail very properly is not content with these minute processes, but repeats them on a larger scale with the aid of the usual chemical instruments and reagents, and thus is enabled to verify or correct one series of experiments by another conducted in a different manner. To use his own words—

> "The first rule, or rather the fundamental principle of this method, is in the study of a substance, to interrogate all the laws under whose influence this substance is developed and exists."

To accomplish such a plan, it is evident that the observer must not rely on the resources of one science alone, but must call to his aid all the lights afforded by others which have any bearing on the subject of his investigations.

M. Raspail's exposition of the theory on which all his work is based, requires a more extended notice, and we shall attempt to give an abstract of it here in as few words as possible, as we shall have occasion to refer to its details more at length in the progress of our remarks. He totally and very justly denies that the atomic theory which has shed so much light on the constitution of inorganic bodies is applicable to those possessed of vitality, for although the organic molecule is the result of a chemical combination of known inorganic elements, they are combined in such a manner, as by this very combination to give rise to a new class of phenomena wholly differing from those of inorganic bodies, we must therefore refer to the very organization of these bodies for an explanation of these phenomena. This organic molecule in its simplest form is considered by M. Raspail as an imperforate vesicle, endowed with the faculty of inspiring gaseous and liquid substances, and of expiring again such of their decomposed elements as it could not assimilate; these vesicles, he thinks, are themselves formed of an aggregation of smaller ones performing the same functions, and that we may suppose them to be composed of water, carbon and a base, which crystallize in the vesicular form, and become endowed with properties widely different from those appertaining to any other combination of inorganic substances, being under the influence of a different law, that of vitality.

The author does not attempt to define the character or nature of this governing principle of organization, as it is only appreciable by its phenomena. He is of opinion, nevertheless, that all the effects of the organization and formation of organs are ultimately referrible to the property with which the organic vesicle is endowed, of inspiring gases and liquids, of condensing the former, of assimilating the products by attraction, and of rejecting or expiring by repulsion its unassimilated contents. This double function, attributed by M. Raspail to the organic vesicle, is identical in its results with the endosmose and exosmose of DUTROCHET, which, however, our author asserts, are nothing more than the result of imbibition: without entering into a discussion of this interesting subject, on which some highly interesting memoirs have already been published in this journal, by Drs. TOGNO, FAUST, VALK, and more especially, by Dr. J. K. MITCHELL, we may be permitted to remark, that the difference between the inspiration and expiration of M. Raspail, and the endosmose and exosmose of Dutrochet, is in reality only in the terms used, the deductions of each author being nearly similar, more especially as the former writer states that the power of the vesicles to thus inspire and expire gases and fluids may depend on electricity, which is the very agent assumed, incorrectly, however, by Dutrochet as producing endosmose and exosmose in living structures.

M. Raspail next proceeds to develop his system, which he avers is not founded on a previously conceived theory, but has been the natural result of the investigations which form the basis of his work. This system, if we understand his explanation, of which we are by no means certain, may be thus explained. The object of all organic reactions being the development of organic tissues, he commences by the study of those organic and compound bodies which chemists heretofore considered as simple substances. But as these substances only become organic by insensible gradations, and not by instantaneous combination, as takes place in the formation of inorganic bodies, we may conceive of an epoch when they only had a tendency of organization. In this state he terms them organizing *(organisitrices)* bodies. These, as before mentioned, are the result of the elaboration to which oxygen, hydrogen, and carbon have been subjected in the organic vesicle, for he does not think that azote plays any part, except in sometimes combining with hydrogen, thus forming ammonia, and then entering as a base into certain tissues. The three other gases, however, under the influence of the vesicle, gradually become elaborated in such a manner, as to at last assume all the characters of organizing elements of the vesicle. He terms them therefore, organizating *(organisantes)* substances.

All other bodies he classes under the head of *organic* substances. These may be considered, says he—

> "As natural and artificial products of the disorganization of tissues, or of a deviation of the organizating combination. These latter are nothing more than substances which have been excreted or thrown off as useless. They serve to saturate the bases, to prepare double decompositions, and in this way to assist in the combination of earthy bases, and organizing substances. Others again are mere errors of analysis, whose true nature and uses it remains to point out."

It will be seen from the preceding analysis of M. Raspail's system, that he adopts the now generally-received opinion, that the ultimate structure of all organic structures is vesicular; we say adopts, for although no other conclusion can be drawn from his text, than that he has deduced this fact from his own experiments alone, it is by no means a novel one, as it is noticed by HALLER, and was most ably and satisfactorily developed by MILNE EDWARDS, before the appearance of any memoir of M. Raspail's on the subject; nor can we perceive that the latter has thrown any additional light on the subject: the mystery of the conversion of inorganic principles into organic structure is still as far from being solved as before, for it is still referred to the agency of a certain unknown power, of whose essence we are as perfectly ignorant as ever, and which will always continue an enigma to us. Researches on this point, nevertheless, like those of the alchemists for the universal solvent, have always been attended with beneficial results, by the discovery of some new and unexpected property or combination of matter, however egregiously they have failed in the development of the great arcanum. That electricity may hereafter be found to be the great and pervading agent of mobility in the ultimate structure, we are willing to admit, but this will not remove the veil in the slightest degree, nor explain in what manner the ultimate particles of matter becomes fitted to receive its influence.

We shall pass over M. Raspail's first division on organized vegetable substances, as it would extend this article beyond all reasonable limits to attempt an analysis of his valuable observations on these bodies, and shall confine ourselves to a notice of such parts of his work as have a more practical bearing on animal physiology; at the same time, we cannot thus pass over this portion of his labours without expressing our accordance with most of his views. It is true, there are many points on which he dwells at some length in support of his peculiar views, where his enthusiasm and desire of generalization has led him too far, but taken as a whole, it is by far the most satisfactory account of the ultimate structure of vegetable bodies that has been presented to the world.

The second division of his work includes organized animal substances, and presents some new views of so highly interesting a character, as to induce us to insert them in a condensed form.

In treating of the adipose tissue, the author states that the analogy which exists between the adipose glands in animals, and the fecula in vegetables, must strike every observer. As in fecula, each adipose granule is composed of an integument and an included substance, and both serve for the nutrition of the organs of development, and both are constituted in the same manner. Thus, if a fragment of fat be examined, it will be seen that it is composed of an external vesicle having firm membranous parietes, enveloping small masses, which are readily separable from each other, and each invested with a vesicular membrane; this formation may be further traced in like manner and with the same results, until the vesicles become too small to admit of accurate observation. Each of these masses adheres by some part of its surface to the internal face of the vesicle in which it is contained, by a *hilum*. All these vesicles, and more especially the largest and most external, are covered with a net-work of vessels, which increase in calibre as they approach the hilum, where they are inserted into one of the vessels of the larger vesicle which includes them.

The observations of M. Raspail on the membranous substance of animal organs, show that those membranes which are considered by anatomists as the simplest, are in fact, complicated tissues, evidently composed of several distinct layers. Thus, the epidermis is formed of a collection of vesicles deprived of their contents, and closely applied together. The truly simple animal membrane is the parietes of a vesicle; in this state of simplicity it is so transparent that it is only perceptible by the plaits or folds it forms on being moved; if on the contrary it were a compound membrane, the rays of light would be reflected. On this ground M. Raspail disputes the correctness of the observations of HOME, BAUER, PREVOST and EDWARDS, and we think that he has gone far to show that the pretended globules seen and figured by them, were merely optical illusions, produced by the play of light on the different folds of the membrane. As regards the intimate structure of the muscular tissue, our author considers that when this is in its simplest state, it consists of a bundle of cylinders intimately agglutinated together, and disposed in a very loose spiral form round the ideal axis of the group. These tubes are filled with a substance which is not wholly miscible with water, and they may be considered as elongated vesicles, which are united at each end to other vesicles of the same character.

M. Raspail denies *in toto* the explanation given by PREVOST and DUMAS of the mechanism of muscular contraction, that they contract in a zig-zag form, thus describing angles, the summit of each of which is furnished with a nervous fibre. In the first place, he states that it is impossible to distinguish, by the best microscope, the ultimate muscular fibre from the small nervous fibrillæ, and in the second place that this form is necessarily the result of the mode in which these gentlemen pursued their experiments, and is produced by the adhesion of the muscular fibre to the glass on which it is placed. His own idea, grounded on numerous observations, is, that the contraction of the fibre in length is always occasioned by its extension in breadth, under the influence of the vital principle.

M. Raspail next treats of the nervous system. This he considers as a central mass, giving off branches which are divided into an infinity of bifurcations, and thus by innumerable ramifications are distributed to all points where there is a sensation to be felt or an organ to be excited: after this definition to which there is nothing to be objected he advances the following most extraordinary hypothesis.

> "The nervous centre elaborates thought, (*pensée*,) as the liver elaborates bile, as the male organs elaborate the principle of fecundation, and this elaboration is effected at the *expense of the substance of the brain*, for meditation over-exercises and exhausts it, as an excess of activity exhausts the other glands."

As we shall shortly have occasion to notice some other equally startling assertions of our author as respects the human mind, we shall at present make no comment on the above.

From a series of carefully conducted experiments on the intimate structure of the nerves, M. Raspail has been led to the conclusion that the opinion of Bogros and others, of the nerves being hollow and conveying a fluid, is not supported by facts; for although he does not deny that this anatomist succeeded in injecting the nerves with mercury, he considers the passage of this metal through the nerve, to have been owing to its having forced its way by the mere effect of gravity. Under the microscope, our author has found that the nerves presented a perfectly homogeneous structure, with not the slightest trace of a solution of continuity.

M. Raspail's ideas on the organization of the cerebral mass are so peculiar that we shall give his views in his own words.

> "The convolutions which are observed on the surface of the cerebral lobes, indicate the salient portion of so many cells, which in turn may be composed of other cells, which themselves contain others. These great cerebral cells are arranged round a common centre, but cannot like the nerves be considered as branches derived from a main trunk. For none of them are destined to receive impressions from without, like the sentient extremities of the nerves, they are merely employed in elaborating these impressions."

The author then states that he adopts the theory of Gall, that the brain is a reünion of organs, each of which is endowed with its own peculiar functions; but he wholly denies that any deductions as to the predominance of one of these over the others, can be obtained from the protuberances of the cranium. Nor does he think that the greater volume of the brain indicates greater powers of intellect.

After speaking at some length on the chemical composition of the brain, on which he has offered nothing that requires notice, M. Raspail enters into a consideration of the functions of the brain. This portion of his work is a mere tissue of wild hypotheses, wholly unworthy of the author, and strongly tinctured with the visionary theories of the school to which he belongs. To enable our readers to judge for themselves, we will subjoin a few extracts.

> "The will," says he, "is a result of an atomic combination between two subtle and imponderable elements, impressions and instincts. Instinct is the product of the elaboration of one of the cellular organs of the brain. Impressions are the product of an external excitation. An affinity or attraction exists between impressions and instincts, which varies greatly in its degree as regards the latter."

And he thus proceeds, making out the brain to be nothing more than a mere chemical laboratory in which ideas and passions are concocted as in a retort. We return with pleasure to the more sane portions of M. Raspail's work, and passing over his observations on the structure of bones, cartilage, &c. in which he has very ingeniously and perhaps justly pursued his vesicular theory, we shall proceed to what we think he has elucidated in an admirable manner—the embryonic tissues, and more especially the placenta.

The ovulum, says he, is a vesicle of the ovary which is filled with organizing (*organisatrices*) substances, and remains stationary, until by contact with the fecundating fluid of the male, its contents being disposed to become organized, it detaches itself from its attachments. This ovulum, when not fecundated, is composed of a vesicle of firm but transparent texture, which is filled with an albumino-saccharine fluid in which no trace of organization is perceptible. M. Raspail, however, once met with an ovulum still attached to the ovary which contained an embryon. After fecundation, as is well known, the ovum is composed of an external vesicle, the chorion, and an internal, the amnios. The chorion, says our author, is first smooth, but afterwards becomes covered with arborescent fibrillæ; at this time no appearance of vascularity is perceptible in it; but in a short time a certain number of these fibres are attracted by the surface of the uterus, when a change takes place in their structure, and they become vascular, whilst those which have no communication with the uterus disappear. The vascular fibres ramify and extend themselves till at last they form a large mass, which is the fœtal placenta. On the other hand, that part of the uterus which has attracted the fibrillæ of the chorion, also undergoes modifications; by degrees this surface loses its smoothness, and at last receives each of the fibrillæ into depressions which form in it; this perforated surface is the uterine placenta. M. Raspail appeals in proof of the correctness of his views, to the following experiment. If, says he, we attempt to separate the two placentas from each other in a careful manner, each bundle of the fibrillæ may be separated from the funnel-like cavity of the uterine placenta. This cavity is perfectly smooth, and does not present the slightest appearance of any intimate attachment having existed between it and the fibrillæ.

These fibrillæ of the placenta perform the same function as the vascular papillæ in the intestines, that of inspiring nutritive fluids. At this time the lungs and stomach of the fœtus are in a state of inaction; the nutritive matters taken up by the fibrillæ arriving by means of the umbilical cord at the liver, which acts as a digestive organ, and pours out its elaborated contents into the intestinal canal, whose papillæ in turn inspire the nutritive fluid, whence it is conveyed to all parts of the body.

M. Raspail's views respecting the *membrana decidua*, are based on the following proposition.

> "That all surfaces of an organ, whether internal or external, having once fulfilled their appropriate functions, become detached, are disintegrated, and expose the layer which they had hitherto covered."

Now, the uterus, during gestation, surpassing all the other organs in development and vitality, must, according to the above axiom, throw off numerous layers, which layers M. Raspail considers as the *membrana decidua* of authors. This is certainly an extremely ingenious theory, but is not we think borne out by facts; if it were correct, we ought to meet with these deciduous membranes in numbers corresponding to the term of utero-gestation, which is by no means the case; it would lead us too far, however, to attempt any observations on our author's theoretical opinions; we have therefore preferred presenting our readers with an abstract of them without comment.

Under the title of French tissues, M. Raspail next gives an account of those abnormal yet organized productions so often met with in the different organs of the body, as hydatids, &c. These, from an examination he made of a cyst from the wrist, he considers as the eggs of some undescribed species of animals. This terminates the first group or organized substances; the second or organizing substances, includes those natural bodies which are the product of the elaboration, to which the contents of the organic vesicle have been subjected under the influence of the vital principle; these the author divides, as in the last group, into vegetable and animal. The vegetable are gum, sugar, and sap, which we regret that we shall be obliged to pass over without further notice, than to recommend to the vegetable physiologist an attentive study of the observations on the cellular and vascular circulation in plants, as being decidedly the best account of this mysterious process that has hitherto appeared.

The animal organizing substances are more numerous, but our limits will only permit us to notice what the author says on the blood; this is an extremely interesting portion of the work, and we have been tempted to examine it at some length. After giving the various analyses of this fluid, M. Raspail proceeds to the mechanism of the circulation, which as might be expected from what we said when giving an abstract of his general theory, he attributes to the expiration and inspiration of the parietes of the vessels.

> "As the blood is designed to convey life to all parts of the system and for the nourishment and reparation of the organs, it is necessary that a part of it should be absorbed by the surfaces which it bathes; these surfaces must have

the power of abstracting its nutritive portions, and they must also be enabled to return to it what they cannot elaborate, or in other terms, they must *inspire* and *expire*. Now, this double function cannot take place without producing a motion in the fluid, and this must be constant and uniform, from this double function being inherent to every molecule of the surface of the vessels."

"Every surface which aspires, if it be flexible, must in turn be attracted towards the substance aspired, it is therefore evident that this process alone will explain the movements of systole and diastole of the heart and arteries. The heart in fact, being free as regards the greater part of its surface, therefore offers the least resistance to this action, and hence its motion is the most marked. When its internal parietes aspire, or in other words, assimilate the contained fluid, it contracts, when on the contrary its internal surface expires, being repelled by the fluid it repels, the heart dilates. But as the play of this organ is energetic on account of its size, its movements also add to the rapidity of the circulation in the arterial system, which therefore, besides their own proper actions of aspiration and expiration, present pulsations isochronous with those of the heart."

Such is M. Raspail's theory of the circulation, and it certainly has the merit of being extremely ingenious and plausible; it however, requires more proof than he has adduced in its favour, and in its present form is liable to many objections, as for instance, if the pulsations of the heart and arteries were thus the result of a mere assimilating or reparatory process, why should mental emotions exercise so instantaneous and marked an influence on them.

A great diversity of opinions have existed among physiologists and anatomists as to the form and composition of the globules of the blood, and notwithstanding the apparent accuracy of our author's observations on them, the question still remains in an unsettled state. Thus, he asserts that the globules are entirely soluble in pure water, whilst MM. DONNE and BOUDET, who have repeated his experiments, positively declare that they are wholly insoluble, and still more recently M. MULLER has confirmed this fact. All that can with absolute certainty be said, is that the globules of the blood are formed of a colourless substance, enveloped in a red-colouring matter. As respects the coagulation of this vital fluid, the explanation given by M. Raspail is clear, and merits attention. After stating that blood freshly drawn is always alkaline, he goes on to say—

"The carbonic acid of the atmosphere, and that which is formed in the blood itself, from its avidity for oxygen, saturates this alkaline menstruum of the albumen, which is then precipitated in the form of a coagulum. The escape of the ammonia, (one of the alkalies present,) and above all the evaporation of the water of the blood, also set free an additional quantity of albumen."

Our author has subjoined to this account of the blood some observations on the modes proposed by ORFILA for the verification of spots of blood. This discovery was considered of the utmost importance in a medico-legal point of view, and remained undisputed for a long time. M. Raspail, however, has most incontestably shown that neither the method of Orfila or the still later one proposed by Barruel can be depended upon, as they may lead to the most unfortunate results if adduced as evidence in cases of suspected murder.

We shall not pursue our examination of M. Raspail's work any further, for, as we have already stated, to enter on its contents fully would require as many pages as are contained in the treatise itself; our design will be answered if we shall have excited a desire in our readers to study it themselves, as we feel convinced that it will amply repay the time bestowed upon it, for although there is much in it that is unsubstantiated, and not a little that had better have been omitted, taken as a whole we consider it as one of the most useful works on organic chemistry and physiology that has appeared for a length of time, and we trust that the author may be enabled to revise it in such a manner as to render it of still greater utility. R. E. G.

Art. XVII. *The Hand, its Mechanism and Vital Endowments, as Evincing Design.* By Sir Charles Bell, K. G. H., F. R. S. L. & E. Philadelphia, Carey, Lea & Blanchard, 1833. pp. 213.

THE origin of the Bridgewater treatises, of which this is one, has been so extensively made known, that we avoid giving an account of it here, although this would seem to form the most natural introduction to our review. The common object to be fulfilled by the writers, is to illustrate "the power, wisdom, and goodness of God, as manifested in the creation." It is a noble, but at the same time a most difficult theme. Man is placed at an infinite distance from the throne of the Almighty, and yet in his self-conceit he thinks that "he can by wisdom find out God," and he pronounces with presumptous confidence upon the designs and motives of the Divine government. We remember to have heard Mr. Corrêa de Serra call the searchers after final causes, the *coffee-house politicians of heaven;* and they but too often merit the ridicule so strongly expressed in these words.

There is certainly no occupation more worthy of engaging the efforts of man, than the study of the works of God; and in consideration of the difficulty of the task and the feebleness of his powers, he may well be excused, if he sometimes take erroneous views of nature. But let him beware how he rashly pronounces his views to be those which governed the Creator; let him be cautious, even how he expresses his admiration of what he conceives to be the contrivances of Divine wisdom, lest he should "praise amiss." It is well-known